

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NUMBER: 89-107

SITE CLEANUP REQUIREMENTS FOR:
FMC CORPORATION - GROUND SYSTEMS DIVISION
333 WEST JULIAN STREET
SAN JOSE, SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

1. FMC Corporation (FMC), hereinafter called the discharger, manufactured and assembled machinery equipment at the facility located at 333 West Julian Street, San Jose, Santa Clara County (Site).
2. The facility occupies an approximately eleven acre site adjacent to the Guadalupe River in west-central San Jose. (Attachment 1 for location map.) The property is on a gently south sloping (15'-20'/mi) river flood plain. Shallow site geology is comprised of discontinuous interbedded recent sand, silt and clay. Two water-bearing zones have been identified: the A-level aquifer (A-aquifer) at 15'-30' deep and the first B-level aquifer (B1-aquifer) at 40'-65' deep. The A- and B1-aquifers are separated by silty and clayey layers; the B1-aquifer is separated from the regional aquifer of the Santa Clara Valley by a greater than 100 foot thick aquitard.
3. The discharger and predecessor companies have operated and owned the Site continuously from approximately 1910 to the present. Nine buildings are on the Site which are either vacant or used for parts and equipment storage. Various FMC business units have used the Site for machinery construction and assembly operations including metal foundry, machining and welding, metal surface preparation, degreasing and painting. FMC ceased manufacturing operations in 1986 and currently utilizes portions of the property for equipment and parts warehousing.
4. In October 1986 and January 1987, the discharger conducted preliminary soil investigations. Eight soil borings were placed in areas known to have been product or waste repositories, and suspected to contain elevated levels of chemical compounds. A February 1987 letter report listed compounds found. These include oil, diesel, TCE, TCA, toluene, and metals such as copper, nickel, lead, zinc and chromium.

5. In June 1988 FMC obtained permits from the City of San Jose Fire Department for the removal of an underground Bunker "C" oil tank. Between June 15, 1988 and August 10, 1988, the tank and 2300 cubic yards of surrounding soil, were removed and disposed of to a permitted off-site Class II facility. Clean backfill was placed in the excavation area in late 1988 and asphalt paving was replaced over the excavated site in early 1989. A report on removal of the tank and surrounding soil was submitted to the Board in December 1988. Except for diesel and oil in samples taken in the vicinity of a former Bunker "C" fuel oil underground storage tank, results of analyses for petroleum hydrocarbons for all samples from the 1986-1987 investigation were below relevant standards.
6. In November, 1988, FMC completed further soil and groundwater investigation. Data from thirteen groundwater monitoring wells sampling the A- and B1-aquifers, and 68 soil borings (average depth 8'), were submitted to the Board in a comprehensive environmental assessment report, on January 31, 1989. The report describes the nature and location of soil and groundwater pollution and the hydrogeology of the two water-bearing zones. Additional work will be required to more completely characterize the site.
7. Results of soil and groundwater investigations indicate the presence of VOCs, metals, and petroleum hydrocarbons in the soil and of VOCs in the shallow groundwater. The following maximum concentrations have been detected at the Site:

COMPOUND	SOIL	CONCENTRATIONS	
		A-AQUIFER	B1-AQUIFER
1,1,1-TCA	1200 ppb	1700 ppb	7 ppb
TCE	3400 ppb	190 ppb	120 ppb
1,1-DCE	5 ppb	290 ppb	
cis-1,2-DCE	29 ppb	370 ppb	170 ppb
PCE	140 ppb		9 ppb
1,1-DCA		120 ppb	
1,2-DCE		0.7 ppb	
trans-1,2-DCE		13 ppb	6 ppb
vinyl chloride		8 ppb	12 ppb
2,3-dimethylbutane			110 ppb
methylcyclopentane			260 ppb
cyclohexane			100 ppb
PCB	200 ppb		
xylene	3900 ppb		
chromium(total)	380 ppm		
copper	3100 ppm		
nickel	390 ppm		
lead	1300 ppm		
oil	8000 ppm		
diesel	6600 ppm		

8. FMC submitted a proposed work plan and schedule for additional characterization of soil and groundwater pollution and analysis of remedial action alternatives on March 8, 1989. Three phases of work are proposed:
 - a) Additional soil and groundwater characterization,
 - b) Characterization of the hydraulic properties of the A- and B1-aquifers at the Site, and
 - c) Evaluation of remedial alternatives.
9. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 17, 1986. The Basin Plan contains water quality objectives and beneficial uses for South San Francisco Bay, the Guadalupe River and contiguous surface and groundwater.
10. The existing and potential beneficial uses of groundwater underlying and adjacent to the facility include:
 - a) Industrial process water supply
 - b) Industrial service water supply
 - c) Municipal and Domestic water supply
 - d) Agricultural water supply
11. The discharger has caused or permitted, and threatens to cause or permit waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance.
12. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.
13. Onsite and offsite interim containment and cleanup measures may need to be implemented to alleviate the threat, if any, to the environment posed by the continued migration of pollutants or to provide a substantive technical basis for designing and evaluating the effectiveness of final cleanup alternatives.
14. The Board has notified the discharger and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharger and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.
15. The Board, in a public meeting, heard and considered all comments pertaining the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the discharger shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will significantly degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.
2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.
3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. SPECIFICATIONS

1. The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.
2. The discharger shall define the horizontal and vertical extent of all soil and groundwater pollution at the Site and the hydrogeologic conditions in the area of and contiguous to identified pollution.
3. The discharger shall conduct monitoring activities as needed to define the current local hydrogeologic conditions, and the lateral and vertical extent of soil and groundwater pollution at the Site. Should monitoring results show evidence of pollutant migration, additional characterization of pollutant extent may be required.

C. PROVISIONS

1. The discharger shall submit to the Board acceptable monitoring and status reports containing results of work performed according to a program as approved by and amended by the Board's Executive Officer.
2. The discharger shall comply with all Prohibitions and Specifications of this Order in accordance with the following tasks and time schedule.

TASK/COMPLETION DATE

a. QUARTERLY GROUNDWATER MONITORING SAMPLING AND ANALYSIS PLAN

TASK: The discharger shall develop and propose a quarterly groundwater monitoring sampling and analysis program. The proposed monitoring plan shall, as a minimum, contain the following: identification and location of wells to be sampled; frequency of water level and water quality sampling; analytical methods, sampling procedures, chain of custody, and Quality Assurance/Quality Control procedures to be used; and cumulative water level and cumulative water quality analysis results in a tabulated format. The plan shall use EPA 8240 open scan and EPA tests for priority metals initially for all new wells, and once for all existing wells. Thereafter, on a quarterly basis, other EPA 8000 series tests may be used, as is appropriate, based upon the compounds and metals detected. Upon approval of the Executive officer, the monitoring program will be implemented and reports submitted in accordance with Provision C.6.

COMPLETION DATE: August 21, 1989

b. ADDITIONAL SOIL AND GROUNDWATER CHARACTERIZATION

TASK: FMC shall further characterize soil and groundwater conditions and extent of pollution. The work shall include, but need not be limited to, soil sampling and analysis, groundwater sampling and analysis in the A- and B-aquifers and horizontal and vertical definition of the onsite soil and groundwater pollution, and any potential offsite groundwater pollution plume.

COMPLETION DATE: August 31, 1989

c. AQUIFER CHARACTERIZATION

TASK: The discharger shall determine the hydraulic properties of the A- and B1-aquifers. Pumping wells installed in strategic locations shall be used for step- and constant-discharge drawdown tests. Observation wells will be used to monitor water levels during the pumping test(s). Pumping wells shall be installed and developed in an approved manner until stabilized water conditions are achieved. Observation wells shall be installed and

developed in a like manner if no existing monitoring wells can be utilized.

COMPLETION DATE: September 30,
1989

d. EVALUATION OF INTERIM REMEDIAL ALTERNATIVES

TASK: Submit a technical report which contains an evaluation of the need for an interim remedial action. If the evaluation shows that an interim measure is necessary, then the report shall contain an evaluation of all proposed interim remedial alternatives, and a schedule for implementation of each alternative proposed. The time schedule shall specify a date for submission of a technical report documenting the implementation of any selected interim remedial action(s). Proposed interim remedial alternatives shall evaluate: 1) the removal and/or cleanup of polluted soils; 2) alternative hydraulic control systems to contain and to initiate cleanup of polluted groundwater; and 3) pilot or treatability studies relative to possible final remedial measures.

If extraction of groundwater is an element of a proposed interim action, this report shall also evaluate groundwater re-use per Board Resolution 88-160 to include feasibility of discharge to a Public Owned Treatment Works (POTW), re-injection or re-use of the extracted groundwater. If re-use is demonstrated to be impracticable then the report should include a completed NPDES permit application to discharge to surface waters, if such discharge is an element of the plan.

COMPLETION DATE: November 30, 1989

e. REMEDIAL INVESTIGATION REPORT

TASK: Submit a technical report documenting completion and presenting the results of the work described in Tasks C.2.b. and C.2.c. The report shall incorporate relevant data and information obtained from all prior Site investigations. As a minimum, the report shall discuss results of the site investigation including: 1) hydrogeologic conditions based on results of all site investigations, including cone penetrometer data, 2) vertical and horizontal extent of soil and groundwater pollution, 3) the extent to which soil conditions at and/or beneath the Site may have

contributed or may be contributing to groundwater pollution, 4) the potential of onsite wells, and nearby wells that may be threatened by a migrating offsite pollution plume(s), to act as conduits for vertical migration of pollutants, and 5) any additional data or investigative measures needed to complete the remedial investigation, if such exist, with a proposed schedule for obtaining the data.

COMPLETION DATE: December 31, 1989

f. REMEDIAL ALTERNATIVES REPORT

TASK: Submit a technical report containing a summary of results of site investigations; an evaluation of the interim remedial actions in place, if any have been implemented; a feasibility study evaluating alternatives for final remediation and a summary of tasks involved and leadtimes for implementation of each alternative; proposed objectives for final cleanup; and a discussion of the preferred remedial alternative.

COMPLETION DATE: April 30, 1990

g. FINAL REMEDIATION IMPLEMENTATION PLAN

TASK: Following receipt of written approval from the Board on the proposed cleanup objectives and preferred remedial alternative submitted under Provision C.2.f., submit a workplan and time schedule for implementation. The time schedule shall include a date for submission of a technical report documenting the implementation of the final remedial measure(s).

The report will also include as evaluation of the feasibility of water reuse, in accordance with Regional Board Resolution 88-160, if such discharge is an element of the final remediation plan.

COMPLETION DATE: 120 days following receipt of written approval from the Board on the proposed cleanup objectives and preferred remedial alternative submitted under Provision C.2.f.

3. All technical reports submitted must be acceptable to the Executive Officer. The submittal of technical reports evaluating interim and final remedial measures

will include a projection of the cost, effectiveness, benefits, and impact on public health, welfare, and environment of each alternative measure. Remedial investigation and feasibility studies shall be consistent with the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300); Section 25356.1 (c) of the California Health and Safety Code; U.S. Environmental Protection Agency "Interim Final Guidance for Conducting Remedial Investigation Studies under CERCLA", October, 1988; and the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California".

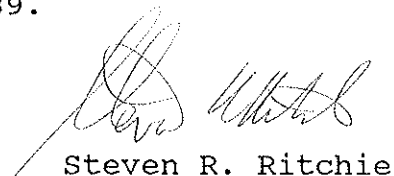
4. Any proposal for the discharge of extracted groundwater included in the technical reports or other submittals under this Order must initially consider the feasibility of reclamation or discharge to a publicly owned treatment works (POTW) as specified in Board Resolution 88-160. If it can be demonstrated that reclamation or discharge to a POTW is technically and economically infeasible, a proposal for discharge to surface water shall be considered. The completion of Provision 2.d. or 2.g. can satisfy the requirements of this provision to consider groundwater reclamation or discharge to a POTW.
5. If the discharger is delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the discharger shall promptly notify the Executive Officer prior to the completion date(s).
6. On a quarterly basis, the discharger shall submit a technical report of progress toward compliance with this Order per Provision 2, and present results of regular quarterly groundwater monitoring per the monitoring plan of Provision 2.a. The report shall be submitted one month following the end of each quarter, commencing with a report for the quarter ending September 30, 1989, and due October 31, 1989. These quarterly reports shall include, but need not be limited to the following:
 - a) In accordance with and once the groundwater monitoring program established pursuant to Task C.2.a. above, is implemented,
 - (1) the results of groundwater quality sampling of monitoring wells;
 - (2) updated water table and piezometric surface maps for A- and B1-aquifers;

- (3) any updated cross-sectional geologic maps describing the hydrogeological setting of the Site;
 - (4) any updated appropriately scaled and detailed base maps showing the location of all monitoring wells, extraction wells and identifying adjacent facilities and structures; and
 - (5) changes in groundwater quality or in the monitoring network.
 - b. A summary of work completed during the quarter and work projected to be completed during the coming quarter.
 - c. Description of problems encountered during the quarter with tasks or schedules of this Order, and of any such problems anticipated during the coming quarter, with a description of actions planned to address these anticipated problems.
- 7. All hydrogeological plans, specifications, reports, and documents shall be signed by or stamped with the seal of a registered geologist, registered engineering geologist or professional engineer.
 - 8. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.
 - 9. The discharger shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.
 - 10. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be provided to the following agencies:
 - a. Santa Clara Valley Water District
 - b. Santa Clara County Health Department
 - c. City of San Jose
 - d. State Department of Health Services/TSCD

The Executive Officer may additionally require copies of correspondence, reports and documents pertaining to compliance with this Order to be provided to the U.S. Environmental Protection Agency, Region IX, and to a local repository for public use.

11. The discharger shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:
 - a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
 - b. Access to copy any records required to be kept under the terms and conditions of this Order.
 - c. Inspection of any monitoring equipment or methodology implemented in response to this Order.
 - d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger pursuant to this Order.
12. The discharger shall file a report on any changes in Site occupancy and ownership associated with the facility described in this Order.
13. If any hazardous substance is discharged in or on any water of the state, or discharged and deposited where it is, or probably will be discharged in or on any waters of the state, the discharger shall report such discharge to this Regional Board, at (415) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-business hours. A written report shall be filed with the Regional Board within five (5) working days and shall contain information relative to: the nature of waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control, and Countermeasure Plan (SPCC) in effect, corrective measures that have been taken or planned, and a schedule of these activities, and persons/agencies notified.
14. The Board will review this Order periodically and may revise the requirements as necessary.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on June 21, 1989.



Steven R. Ritchie
Executive Officer